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Influence of Farrowing Crate Design on Sow Productivity: A Demonstration Project

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Abstract
This demonstration project studied the differences in farrowing crate designs and the survival of piglets. Three basic crate designs were studied: crates with hydraulic side rails, crates with solid rod finger side rails, and freestall crates. Crates with hydraulic sides in this study had more pigs born alive, had fewer pigs born dead, weaned more pigs, and had higher weaned litter weights than any other crate studied. The freestall crates had the least number of pigs born alive, weaned fewest pigs, and had the lightest litter weaned weights. Freestall crates fell in the middle of hydraulic and solid rod crates for pigs born dead. The solid rod crates fell in the middle of hydraulic and freestall crates for pigs born alive and weaned litter weight. Solid rod crates weaned slightly more pigs than freestalls. Solid rod crates had the most number of pigs born dead. Flooring layout was not replicated for all crate designs. Although flooring may have had an influence on the results it was not measurable in this study.

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Summary and Implications

This demonstration project studied the differences in farrowing crate designs and the survival of piglets. Three basic crate designs were studied: crates with hydraulic side rails, crates with solid rod finger side rails, and freestall crates.

Crates with hydraulic sides in this study had more pigs born alive, had fewer pigs born dead, weaned more pigs, and had higher weaned litter weights than any other crate studied.

The freestall crates had the least number of pigs born alive, weaned fewest pigs, and had the lightest litter weaned weights. Freestall crates fell in the middle of hydraulic and solid rod crates for pigs born dead.

The solid rod crates fell in the middle of hydraulic and freestall crates for pigs born alive and weaned litter weight. Solid rod crates weaned slightly more pigs than freestalls. Solid rod crates had the most number of pigs born dead.

Flooring layout was not replicated for all crate designs. Although flooring may have had an influence on the results it was not measurable in this study.

Introduction

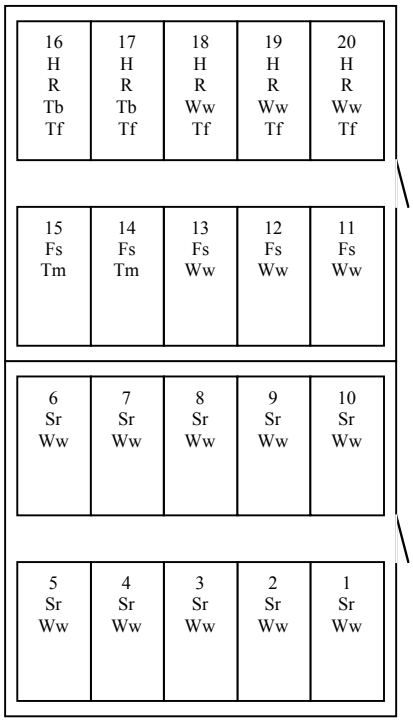
Piglet deaths are a major problem in the swine industry. The investment cost is high when purchasing farrowing crates. Producers want to make an informed decision when purchasing farrowing crates. There also has been renewed interest in the use of farrowing pens.

Materials and Methods

Kirkwood Community College located in Cedar Rapids, IA built a new swine teaching unit in 1993. The unit has two farrowing rooms with 10 crates in each room. The south farrowing room has all the same style of crate. The north farrowing room has four different farrowing crate setups. Crates 16 through 20 are hydraulic sided and have raised sow areas. Crates 16 and 17 have European TriBar for the sows and Tenderfoot for the creep area. Crates 18 through 20 have 00 woven wire for the sows and Tenderfoot for the creep area. Crates 11 through 15 are free stalls. Crates 11 through 13 are 00 woven wire. Crates 14 and 15 have TriMax flooring. Crates 1 through 10 are solid rod finger crates with 00 woven wire flooring.

There were 533 sows farrowed in this study. This was a start up period for the Kirkwood facility. The first 5 months of farrowings was all gilts. This is a teaching facility and not all sow cards were recorded correctly or had missing information. From the 533 farrowings there were 393 records that were usable.

Figure 1. Farrowing building layout and design.



The number of pigs born alive was recorded by students. In some cases the farrowing may have occurred in the absence of a herdsman. Pigs born dead were recorded by the herdsman best judgment as to weather the pig was born dead or died after birth. Pigs were not posted to determine cause of death.

The number of pigs started per crate is defined as the number of pigs left with a sow after the herdsman added or moved pigs to other pens as the need arose. Usually this is done within 24 hours after farrowing.

The farrowing crates were looked at individually and as a group of similar designs to see if there are any differences in piglet survival.

Steve Juhl is the unit manager. The students do most of the work and record farrowings using farrowing cards. The first gilts were farrowed July 21, 1993. The records included in this demonstration ended December 1995. The farrowings per crate included about 20 farrowings.

Key to abbreviations.

- Hydraulic-sided, raised sow area, European TriBar (smooth no traction notches) flooring for sows and Tenderfoot flooring for creep area. (HRTbTf)
- Hydraulic sided, raised sow area, 00 woven wire flooring for sows and Tenderfoot flooring for creep area. (HRWwTf)
- Farrowing stalls with TriMax (Notched on surface for traction) flooring. (FsTm)
- Farrowing stalls with 00 woven wire flooring. (FsWw)
- Solid rod finger crates with 00 woven wire flooring. (SrWs)

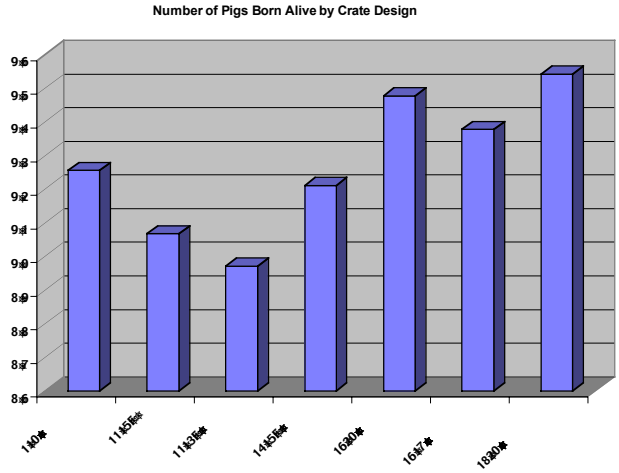
Results and Discussions

The crates with the hydraulic sides and raised sow area had the most pigs born alive. Crates 18–20 farrowed 9.54 pigs per litter. Crates 16 and 17 farrowed 9.38 pigs per litter.

The free stall with 00 welded wire (11–13) farrowed the least number of pigs born alive with 8.97. The free stall crates with TriMax flooring had more pigs born alive then the woven wire flooring with 9.21 pigs born per litter.

Solid rod woven wire crates (1–10) fell in between the free stall and hydraulic sided crates. Solid rod woven wire crates farrowed an average of 9.26 pigs per litter.

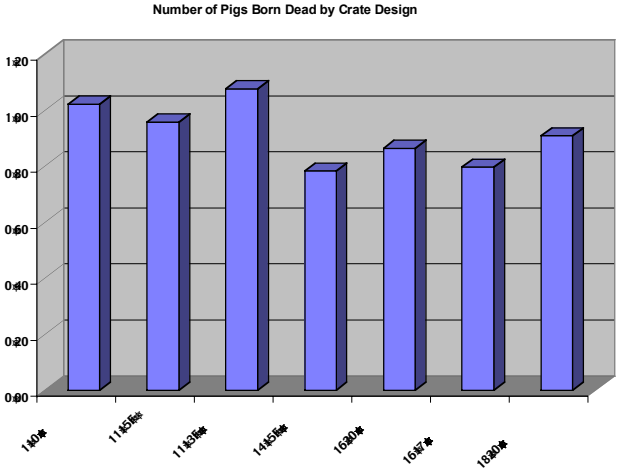
Figure 2. Number of pigs born alive by crate design.



When comparing all free stall crates and hydraulic sided raised sow area crates there is a difference of .41 pigs born per litter favoring the hydraulic sided crates with the raised sow floor area. Hydraulic sided crates also had an advantage of .22 pigs farrowed per litter over the solid rod crates.

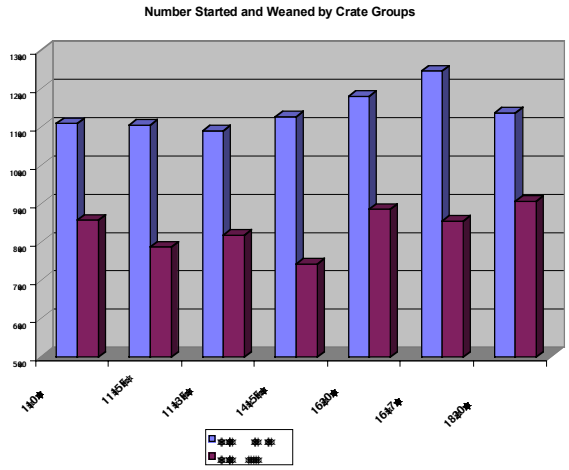
The free stall crate with TriMax flooring had the least number of pigs born dead with .78 pigs born dead. The hydraulic sided raised sow area with Tenderfoot

Figure 3. Number of pigs born dead by crate design.



flooring had only .8 pigs born dead per litter. The free stall with woven wire had the highest number of pigs born dead with 1.08 pigs per litter. As a group the hydraulic sided

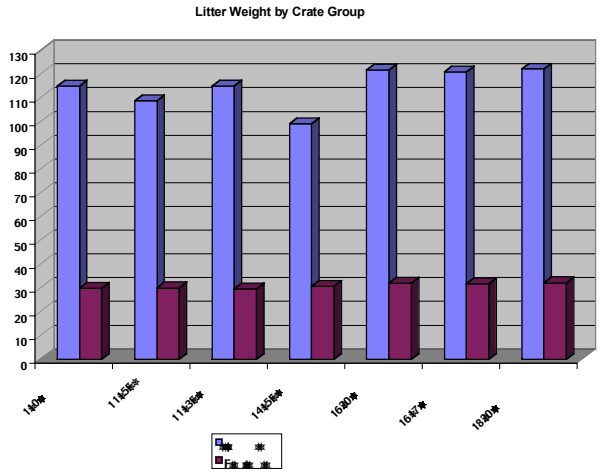
Figure 4. Number of pigs started and weaned by crate design.



raised sow area crates had the least number of pigs born dead than any other group of crates.

Most pigs were started in crates 16–17 hydraulic-sided raised sow area with European TriBar and tenderfoot pig area. Crates 16 and 17 hydraulic sided raised sow area with tribar flooring weaned the third most number of pigs. Crates 14 and 15 freestall TriMax and 18–20 hydraulic sided woven wire with raised sow area had similar number of pigs started, but 18–20 hydraulic sided raised sow area with woven wire weaned more pigs by 1.23 pigs per litter. Freestall crate with TriMax flooring 14 and 15 had the biggest spread from started pigs to weaned pigs of 3.84 pigs per crate.

Figure 5. Litter weight by crate design.



Average litter farrowing weight was within two pounds when comparing all crate groups (30–32 lb).

Weaning litter weights averaged 99 pounds for the freestall with TriMax flooring to 122 pounds with the hydraulic-sided raised sow area, woven wire with tenderfoot flooring (18–20). It appears that the hydraulic sided crates had the highest weaning weights. The freestalls had the lowest weaning weights and the solid-rod-sided crates fell in between the freestall crates and hydraulic sided crates.

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